

## BOOK REVIEW

**Australian butterflies: distribution, life history and taxonomy** by Kelvyn L. Dunn and Lawrence E. Dunn Parts 1-4. Published privately by the authors, 1991, 660 pp. ISBN 0 646 040903 6 (Part 1), ISBN 0 646 040902 8 (Set).

This review is published in four parts with A4 pages and soft covers. The bulk of the text concentrates on species accounts where the authors provide an update of information from recent publications on Australian butterflies and temporal data. The authors sometimes make new taxonomic changes, particularly relating to the status of certain subspecies. There are no illustrations of any butterflies or immature stages.

The authors focus on butterfly life-histories and new information available since publication of *Butterflies of Australia*, by Common and Waterhouse (1981 edition), for which the Review is intended to be a supplement. In Part 1 the Introduction is followed by summaries for species in the families Papilionidae and Pieridae and references. Maps showing floristic and phytogeographic regions of Australia and maps for distribution of each species in the two families dealt with, are followed by temporal data for all species based on label data from selected collections, tabulated according to 33 biogeographic regions and zones of Barlow (1985, *Brunonia* 8: 387-392). For each phytogeographic region, tables with monthly records for each species are followed by graphs based on total species records by months. Finally, temporal data are tabulated for all 396 Australian species and also graphed according to number of records by months.

Subheadings in the Introduction discuss temporal and spatial distribution of butterflies, referencing, use of early literature, biogeographic regions, taxonomy, reliability of label data, early collections, collections referred to for compiling information and acknowledgements. Parts 2 (Hesperiidae) and 3 (Lycaenidae) contain species accounts and distribution maps while Part 4 (Nymphalidae) has in addition, a list of larval food plants (including most recent records), followed by new information since compilation of the text and a corrigenda. None of the parts contain an index.

An important contribution in this review is the temporal information and the way it is presented. However, the phytogeographic zones and regions used are not always appropriate for Lepidoptera. For example, the McPherson Region extends from about Gympie, Qld to Newcastle, NSW but most biogeographers would agree that a more appropriate southern boundary for Lepidoptera is nearer the Clarence River. Another important biogeographic region extending from Cape York south to about Rocky River, has not been recognised by the authors as distinct from a "Cape York" region, which is shown to extend continuously from Cape York to about Townsville. The Kimberley Region is shown in Western Australia to extend to about 100 km south of Broome, whereas the actual southern limit for many coastal species of Lepidoptera is at the edge of a higher rainfall area north of Broome. Fewer zones based on the most prominent geographical boundaries of species of Lepidoptera would have been more meaningful as a basis for the extensive analyses presented by the authors.

There are a few other difficulties with geographical information. In a reference to *Hypochrysops apelles apelles*, p. 352:- "We have been unable to locate 'Ash Island' on maps of the (Newcastle) district...". Ash Island in the Hunter River was well known to early insect collectors including W.A. Scott (1864) who collected a specimen of *H. apelles* on the island. The specimen referred to is lodged in the Australian Museum, Sydney. The distribution map for *Ornithoptera (Troides) priamus euphorion* incorrectly shows the southern limit at about Townsville, though

this subspecies is stated in the text, and known to occur commonly at times near Mackay, much further south than shown on the map.

Several published records have been overlooked. For example, *Ornithoptera richmondia* (treated as a subspecies of *Troides priamus*), is discussed on p. 31 - "The last reports for metropolitan Brisbane appear to those of Illidge (1927)". Chris Hill and Roger Kitching (1983) "Appendix A" in (ed W. Davies), Wildlife of the Brisbane Area, give more recent records for Mt Coot-tha, Sunnybank and Tanah Merah. Recent reference to specimens lodged in institutional collections in the northern States would have increased the accuracy of some statements. For *Chaetocneme denitza*, p. 200, the authors state: "Until as recently as Common & Waterhouse (1981) the presence of this species in the Northern territory remained unconfirmed." Actually this species is well known by collectors in the Darwin area, although rare. Specimens are lodged in the DPIF Collection at Berrimah. Similarly, a series of recently-collected specimens of *Protographium leosthenes geimbia* have been lodged in this collection since 1988, although the authors suggest that only four specimens were known. Perhaps the authors could have avoided overlooking these records had they circulated their draft to well-known northern collectors of Lepidoptera for checking.

Occasional typographical errors occur. For example, for *Hypochrysops theon medocus*, p. 343:- "...males congregated around midday in the semi-shade of rainforest, about 23 metres from the ground..." This should read "...2-3 metres from the ground...". Doubts are sometimes cast by the authors about the authenticity of records when the authors of the review have not examined or had access to specimens.

The most controversial aspect of this review is whether it is an appropriate publication for taxonomic changes. Several subspecies are synonymised without providing the nowadays-accepted grounds for doing so. The basis for making these changes is not consistent throughout. For example, all subspecies of *Hypochrysops delicia* are synonymised on the basis of population variation and presence of clines (pp. 345-346). However, *Jalmenus evagoras eubulus* is "...tentatively maintained..." as a valid subspecies because specimens from intermediate populations are apparently insufficient to justify the synonymy. In fact, there are some intermediate populations between the localities for ssp. *eubulus* and ssp. *evagoras* in the J.F.R. Kerr collection, which show intermediate coloration. Several other subspecies are retained by the authors even though the authors admit that clines occur (e.g. *Papilio fuscus capaneus* and ssp. *indicatus*). They re-assessed the status of *Ornithoptera (Troides) richmondia* and regarded it as a subspecies of *O. priamus* though these two taxa can be separated morphologically (by colour, shape and male genitalia), they are allopatric, their hybrids are usually sterile and their biologies and behaviour differ considerably. The authors did accept Hancock's (1983) synonymy of *Ornithoptera*, placing *priamus* in *Troides*.

It could be argued that once authorities such as Common and Waterhouse (1981) separate these taxa as valid species, it is better to recognise them as such unless new information (such as intermediate populations) comes to hand. It is also questionable whether this review is an appropriate publication in which to solve, difficult taxonomic problems. For example, the specific status of *Deudorix epijarbas dido* and *D. epijarbas diovis*. Most lycaenid specialists have known about the two, sometimes sympatric species of *Deudorix* present in eastern Australia. Though *epijarbas dido* and *diovis* have been separated by the authors, their status remains unclear and their relationship with other taxa is even less clearly understood. The complex of *Deudorix* species in Australia and the Pacific region, requires a comprehensive revision so that

the correct specific names can be applied. In neighbouring Papua New Guinea for example, at least 4 very similar sympatric species occur while in the southwestern Pacific, 4 other taxa (*diovella* Waterhouse, *mathewi* Druce, *armstrongi* Hopkins, *doris* Hopkins) have been described but their specific relationships have not been determined. Is *dido* from northern Queensland a subspecies of *epijarbas* from India or is it a subspecies of another species known from PNG or elsewhere? What is the sub-specific status of the southwestern Pacific populations? I believe these sort of taxonomic changes should have been addressed in more comprehensive studies.

As a general rule the information for southern States seems to be quite accurate while for Queensland and Northern Territory some of the information is out of date and occasionally unsubstantiated comments have been made. For example, the author's suggestion that "...it now seems probable that males hilltop or 'tree top' which may explain the apparent scarcity of adults..." for *Acrodipsas illidgei*, is in my opinion incorrect and cannot be deduced from the collection of a single female near Toowoomba on a ridge top.

Despite a number of criticisms, this review is filled with detailed discussion and new information that can be found nowhere else in one publication. In particular, it provides a challenge for further biogeographic studies on these insects. Future butterfly taxonomists, biogeographers and ecologists will refer to this publication for many years to come.

D.P.A. Sands

CSIRO Div. of Entomology

Long Pocket Labs.

Brisbane